

Videoconferencing Gets IP Boost

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Emerging Technology by Robert L. Mitchell

MARCH 03, 2003 ([COMPUTERWORLD](#)) - Videoconferencing used to require users to adjourn to specially designed rooms filled with complex technology that worked over satellite, Integrated Services Digital Network (ISDN) or other private network services. Such systems cost upward of \$50,000 per site. But no more. Compression technology has improved, design upgrades have cut costs, and a new generation of videoconferencing systems designed to work over IP networks as well as ISDN is gaining a foothold in corporations.

"We have seen a heavy shift toward IP," says Stacy Saxon, director of marketing at videoconferencing vendor Polycom Inc. in Pleasanton, Calif. She says she expects 75% of all videoconferencing systems to be IP-based within the next three years, up from just 25% today. Giga Information Group Inc. in Cambridge, Mass., predicts 18.9% annual growth in videoconferencing appliance sales through 2005.

Several developments are driving the technology forward. IP-based systems eliminate the need for ISDN service, which can be expensive and difficult to provision and is unavailable in many locations. Unlike those based on ISDN, IP-based systems can be moved to any office with an Ethernet jack. Corporations are gradually replacing network infrastructures with switches and routers that support quality-of-service standards required for IP telephony and enable clear, jitter-free video services.

"We're piggybacking on what the company's doing with voice over IP," says Chris Duncan, global leader for e-communication technology at The Dow Chemical Co. in Midland, Mich., which is equipping 500 offices worldwide with an IP videoconferencing system. Ethernet advances have also boosted LAN bandwidth to Gigabit Ethernet and 10 Gigabit Ethernet speeds that can better support video feeds. And businesses are also extending those high-bandwidth connections to remote offices. "Getting fairly large bandwidth isn't as big an issue as it was four or five years ago," Duncan says, citing the current glut in long-haul fiber capacity.

Meanwhile, bandwidth requirements are shrinking. Video encoders now support up to 1,000-to-1 compression, delivering acceptable quality in as little as 128K bit/sec. per connection. "It's good-quality video, if you don't have a lot of movement," says Saxon, although Duncan says he considers 384K bit/sec. to be the minimum for acceptable quality. The newest standard, named H.264 by the Geneva-based International Telecommunication Union (ITU), will soon deliver DVD-quality video feeds using less than 1M bit/sec. of bandwidth.

Videoconferencing technology is also starting to converge with traditional Web conferencing systems, allowing IT to create a single interoperable and centrally manageable set of applications that may include data sharing, whiteboarding and streaming media. For example, Polycom's Web conferencing software, called WebOffice, works with its PC-based videoconferencing systems. And Web conferencing vendors are adding video to their services, although analysts say quality-of-service issues will keep most business videoconferencing off the Internet.

"Enterprise users are primarily using VPNs [virtual private networks] and dedicated private IP networks to ensure the quality of service, which cannot be offered by the public Internet," says Roopam Jain, an analyst at Frost & Sullivan Inc. in New York. And while some quality-of-service standards are in place today, analyst Lou Latham at Gartner Inc. describes them as "fluid and incomplete." Network administrators still worry about reliability and performance, he says. "There's an anxiety on the part of network administrators that their

networks are going to get saturated," he says, adding that the key is to keep traffic segregated and prioritized so it moves quickly.

In addition, the ITU's H.323 interface standard for videoconferencing may give way to the Internet Engineering Task Force's evolving Session Initiation Protocol (SIP). That could ease integration problems when adding audio calls from voice-over-IP telephony systems, which use SIP or proprietary protocols, into a videoconferencing session. "That wasn't a problem with ISDN," Duncan says.

Jain says videoconferencing also continues to face ease-of-use issues. For example, users may need to know the destination IP address or phone extension to establish a session. Some products allow the creation of an address book, but most can't access information already stored in an Active Directory or other enterprise directory infrastructure.

Despite its limitations, IP videoconferencing can pay off in organizations that require more than 30 hours of videoconferencing per month, says Giga analyst Elizabeth Herrell. Gartner's Latham is more cautious. "You can start by keeping your ISDN lines and test the IP waters, connection by connection," he says. He doesn't expect end-to-end reliability to be worked out until next year.

But Duncan says the technology hurdles are surmountable. "The bigger challenge is getting people comfortable using the technology."

Russell Kay, a freelance writer in Worcester, Mass., contributed to this story.

Video Over IP

Videoconferencing systems can be configured to run over private IP networks, eliminating the need to provision ISDN while allowing integration with Web conferencing and other IP-based applications. Over wide-area connections, a VPN is often implemented for increased security. Most systems also support ISDN links for background compatibility. Although a portion of the ISDN link may touch the IP network, the ISDN H.320 client protocol differs substantially from the H.323 connections of IP users and doesn't present security issues on the IP network segment, according to Polycom.

